

Calculating the Velocity in the Moss

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The velocity of the warm (1 MK) plasma in the footpoint of the hot coronal loops (commonly called moss) could help discriminate between different heating frequencies in the active region core. Strong velocities would indicate low-frequency heating, while velocities close to zero would indicate high-frequency heating. Previous results have found disparaging observations, with both strong velocities and velocities close to zero reported. Previous results are based on observations from Hinode/EIS. The wavelength arrays for EIS spectra are typically calculated by assuming quiet Sun velocities are zero. In this poster, we determine the velocity in the moss using observations with SoHO/SUMER. We rely on neutral or singly ionized spectral lines to determine accurately the wavelength array associated with the spectra. SUMER scanned the active region twice, so we also report the stability of the velocity.

CALCULATING THE VELOCITY IN THE MOSS

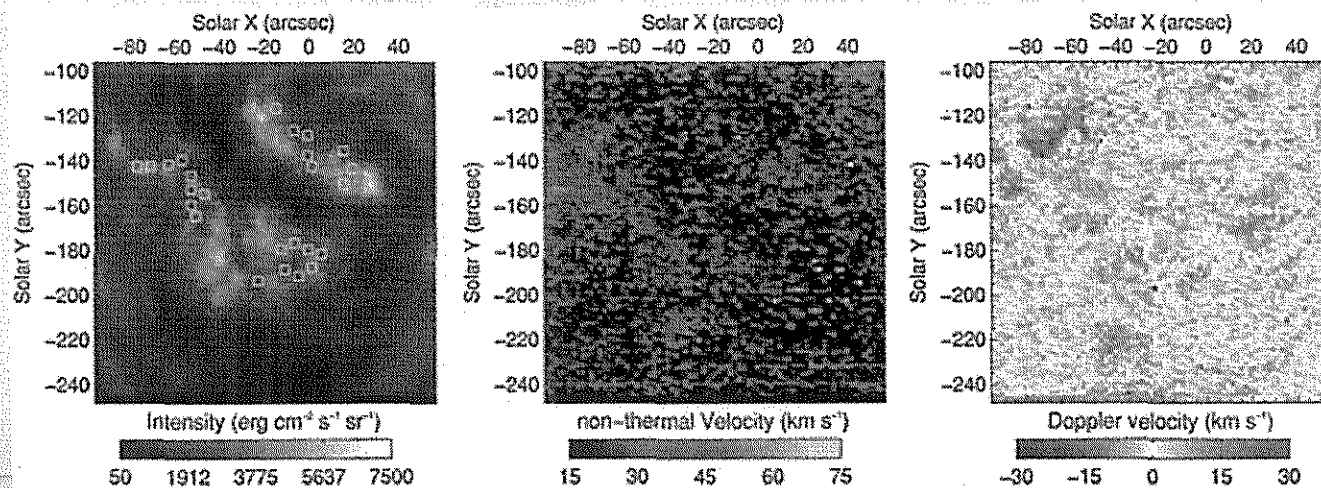
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ABSTRACT

The velocity of the warm (1 MK) plasma in the footpoint of the hot coronal loops (commonly called moss) could help discriminate between different heating frequencies in the active region core. Strong velocities would indicate low-frequency heating, while velocities close to zero would indicate high-frequency heating. Previous results have found disparaging observations, with both strong velocities and velocities close to zero reported. Previous results are based on observations from Hinode/EIS. The wavelength arrays for EIS spectra are typically calculated by assuming quiet Sun velocities are zero. In this poster, we determine the velocity in the moss using observations with SoHO/SUMER. We rely on neutral or singly ionized spectral lines to determine accurately the wavelength array associated with the spectra. SUMER scanned the active region twice, so we also report the stability of the velocity.

PREVIOUS RESULTS

- * Brooks and Warren (2009) find no evidence for strong flows in moss regions.
- * They used the Fe XII 195.2 Å line formed at 1.2 MK . To determine wavelength calibration, they assumed the average velocity over the entire data set was 0.



QUESTION

- ✱ What are typical velocities in active region moss?
- ✱ If the velocities are approximately 0, then steady heating would be supported.
- ✱ Strong redshifts (like warm EUV loops), however, would support impulsive heating and radiative cooling.
- ✱ We use SUMER data to answer this question because SUMER allows for excellent wavelength calibration.

DATA

- ✱ On May 11, 13, and 15, 1999, SUMER scanned active regions with windows in the 1523-1566 Å range.
- ✱ The active regions were each scanned twice.
- ✱ Observations included six full detector observations for wavelength calibration (three before and three after the raster
- ✱ This study focuses on the Ne VIII 770 Å line observed in second order ($T_{\text{max}} = 6 \times 10^5 \text{ K}$).